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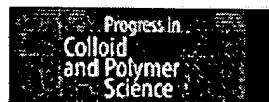
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Influence of composition on the interdiffusion of poly(vinyl acetate) latex particles

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Abstract:

Abstract The influence of the comonomer sodium vinyl sulfonate (SVS) on the interdiffusion of poly(vinyl acetate) latex particles during film formation was studied. Poly(vinyl acetate) latices with contents of 0, 0.5, 1.5 and 3 wt% SVS were investigated utilizing small-angle neutron scattering. For each SVS content pairs of identical particles differing only by deuteration were synthesized by emulsion polymerization. The measurements were performed at 55 and 60 °C with samples containing 5 wt% of deuterated and 95 wt% of protonated particles, respectively. The hydrophilic shell formed by SVS and vinyl acetate copolymers at the particle surface hinders interdiffusion partially. The addition of only 0.5 wt% SVS significantly lowers the value of the diffusion coefficient with respect to the SVS-free sample. Higher content of SVS leads to further retardation of the interdiffusion. In conjunction with NMR measurements of comparable samples it is concluded that the decreasing mobility of the hydrophilic surface layer with increasing SVS content is the determining factor for the interdiffusion process.

Keywords:

key words interdiffusion ·, polymer latex ·, film formation ·, vinyl acetate

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